

CLAIMS

- [1] An imaging apparatus, comprising:
an imaging device comprising a plurality of pixels having a photoelectric conversion function; and
5 a microlens array comprising a plurality of microlenses that form subject images on the plurality of pixels in the imaging device and are arranged in a matrix;
wherein the microlens array comprises grooves in a lattice form between the microlenses that are adjacent to each other, and a depth of the
10 grooves is larger than a half of a thickness of the microlens array.
- [2] The imaging apparatus according to claim 1, wherein a material of the microlens array comprises a light-transmitting resin.
- [3] The imaging apparatus according to claim 1, wherein the microlens array is a plano-convex lens array whose one surface is provided with the
15 microlenses and whose other surface is provided with the grooves and faces the imaging device.
- [4] The imaging apparatus according to claim 1, wherein a light-absorbing material is applied to lateral surfaces of the grooves.
- [5] The imaging apparatus according to claim 4, wherein the
20 light-absorbing material is black.
- [6] The imaging apparatus according to claim 1, wherein a width of the grooves increases toward the imaging device.
- [7] The imaging apparatus according to claim 1, wherein a second material having a smaller light transmittance than a first material forming
25 the microlens array is filled in the grooves.
- [8] The imaging apparatus according to claim 7, wherein the second material comprises a material having a light-absorption function.
- [9] The imaging apparatus according to claim 7, wherein the second material has a larger refractive index than the first material.
- 30 [10] The imaging apparatus according to claim 1, wherein the microlens

array is manufactured by a resin molding.

[11] A method for manufacturing a microlens array, comprising:

obtaining by a resin molding a microlens array whose one surface is provided with a plurality of spherical or aspherical microlenses and whose
5 other surface is flat; and

forming grooves in a lattice form on the other surface of the microlens array by a light irradiation from the other surface.

[12] The method for manufacturing a microlens array according to claim 11, further comprising processing lateral surfaces of the grooves to be black

10 by injecting a solution prepared by dissolving a black coating material in a solvent into the grooves.

[13] A method for manufacturing a microlens array, comprising:

obtaining a microlens array whose one surface is provided with a plurality of spherical or aspherical microlenses and whose other surface is

15 provided with grooves in a lattice form and is flat except for the grooves; and

processing lateral surfaces of the grooves to be black by injecting a solution prepared by dissolving a black coating material in a solvent into the grooves.